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Section I

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IN THIS ISSUE

Principles and Methods of Measuring Office Activities, by F. D. Lehn 1169

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EDITORIAL DEPARTMENT NOTE

The control of costs is one of the primary objectives of cost accounting. By control we should mean something more than a mere limiting or reduction of costs. The object of cost control should be to secure the greatest value for the expenditure made. This type of cost control is based on measurement of the value received as well as measurement of the amounts expended. This measurement precedes control and justifies detailed consideration on the part of the accountant of methods of measuring business activities. While many readers of the article in this issue of the *Bulletin* will be with companies which are too small to have enough repetitive work to justify the use of the methods described here, we feel that much is to be gained from the principles and methods presented in this article even though these principles and methods may not be directly applicable to your company.

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NATIONAL ASSOCIATION OF
COST ACCOUNTANTS

MAY 15, 1939

PRINCIPLES AND METHODS OF MEASURING OFFICE ACTIVITIES

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IN making our approach to the subject under consideration, a few general observations might be helpful. In the first place, the man who insists upon micrometer accuracy should avoid this subject completely. Primarily because of the human element involved, the measurement of office activities demands an attitude of reasonable tolerance. Measurement within satisfactory limits is all that should be required.

Secondly, a definite relationship exists between the amount of clerical service required and the amount of service produced by each employee, and measurement is vitally necessary to determine whether the relationship is proper in all cases. In other words, measurement makes it possible to determine whether employees, considered either as individuals or as groups, are delivering a full quota of service.

Thirdly, at the risk of being taken severely to task, I would like to state, without equivocation, that *all clerical* office activity *can* be measured. However, measurement should not be undertaken merely to demonstrate that it can be done, for it isn't a question of how much can be measured, but rather how much can be measured profitably. In every case, measurement should serve a basic economic purpose, namely, to get work done in a most efficient manner—which means accurately, promptly and at reasonable cost. Ordinarily, the volume of work is the principal factor in deciding whether or not an office activity can be measured profitably.

We shall have space to give only fleeting attention to the application of the principles of measurement to a few office activities, such as mailing, filing, bookkeeping machine operation, typing and stenography. We shall also attempt to refer to methods of gauging executive efficiency and ways and means or co-ordinating group effort to a common end.

The subject under discussion is closely related to such matters as job analysis, formation of routines, time studies, motion studies,

selection and training of employees and wage incentive plans, none of which we can dwell on in this paper.

No general averages of performance are offered because of the innumerable, ever-present, variable factors incident to all office work. Every case must necessarily be considered on its own merits. Results that are considered excellent in one office might be classed as poor work in another office operating under apparently similar conditions.

Principles

The principles of measurement are comparatively simple.

Analyze the Activity

First, it is necessary to analyze the activity under consideration through the medium of a survey conducted with due regard for local conditions. An attempt should be made to strike a happy medium between superficial study and exhaustive scrutiny of non-essential factors. This analysis should disclose any inherent weaknesses of the existing routine, with the result that attention can be directed to the design of improved methods to remedy the situation. The analysis, if faithfully performed, likewise puts us in a position to apply the next principle of measurement which we shall describe as the determination of a proper unit of work.

Determine the Unit of Work

By a unit of work we mean some *repetitive* task that is simple and invariable, in terms of which the results of an office activity can be measured. For example, the results of typewriting effort can be expressed in terms of the number of standard lines of typewritten matter produced. The decision regarding the determination of a proper unit of work for measurement depends largely on the number of employees engaged in the activity under consideration and the amount of specialization in their work. If there is a considerable amount of specialization, different units may be required for each specialized task in the group. For example, in a shipping department, the bill to the customer would probably represent the unit. However, in a large organization, it might be well to assign different units to

freight, express and parcel post shipments. In any event, it should be an easy matter to show the results produced by each employee in terms of the unit of work decided upon.

The analysis already referred to, if scientifically made, should likewise place in our possession, facts that will assist in setting a reasonable standard of performance for each activity under consideration, which we shall refer to as our third principle.

Set Standards

Measurement reports in themselves tell what has been done. The answer to the even more important question "What should be done?" can only be given after proper standards of performance have been determined. As Dr. Reitell puts it in his masterly work entitled *Cost Accounting:*

> Merely to know expenditure is not sufficient. The outlay must always be compared with a carefully measured result, with some amount of output however expressed.

It might be well to state that standards predicated on time and motion studies are far more effective than standards which merely represent average performances. When no goal has been set, the slowest worker sets the pace and average production is likely to be low. On the other hand, when standards are set scientifically through the medium of time and motion studies, allowances for fatigue and personal needs should always be taken into consideration. Office work requires a high degree of concentration. Not even so-called high powered executives can keep going at high speed all day long and they are deluding themselves if they really think they can do so. The truth of the matter is that the mind wanders off by itself if pressed too hard and too steadily. Accordingly, standards should allow for occasional "time out" periods and should merely represent what can be done under normal existing conditions by an employee of ordinary accomplishments. It is also important that standards should be flexible rather than fixed. At reasonable intervals the standards set should be reviewed to determine whether changed conditions warrant revisions being made. Of course, the setting of proper standards represents an important technical subject in itself to which we can only give honorable mention in passing to our fourth principle—

Make Reports Simple and Easy to Prepare

The methods of recording production should be easy to apply and should involve but a small expenditure of time and effort on the part of the employee. Both excessive details and valueless simplicity should be avoided. However, it is far better to err on the side of simplicity; otherwise a complex system of recording, laboriously constructed, will fall before the first onslaught of rush work. Getting the real work done will and should take precedence over the preparation of voluminous detailed measurement reports.

Measure the Individual

Our fifth principle is self-explanatory: Measurement and recording work should be done by individuals wherever possible so that the proficiency of individuals may be compared. Obviously, group efficiency of a number of employees performing similar duties is readily determined by the application of simple mathematics. However, when employees report their own output, it is well to realize that errors are likely to occur, chiefly on the side of increased production. Therefore, an effort should be made to incorporate a simple correlative system of checks and balances in all measurement plans.

Secure Employee Support

Our sixth, last and perhaps most important principle is that measurement plans, in order to function effectively, must be designed to win wholehearted employee support. This phase of the subject is largely philosophic in character, dealing as it does with the vagaries of human nature. However, the human factor does not necessarily make the application of the principle more difficult. Although, admittedly, there is a considerable amount of plain ordinary cussedness bound up in human nature, there is a much larger amount of charitable good will.

There are several practical means of winning employee cooperation and support.

First, induce employees to participate actively in carrying forth your plans from the time the analysis is undertaken until the measurement routine is established and functioning. Tell

them frankly that the goal of measurement is to get more and better work done with less effort.

Second, fair play for the accurate worker demands that some penalty, either in time or in production, be exacted for errors.

Third, *unassigned time* should not be charged to the employee when determining the results of productive effort.

Fourth, in so far as it is possible to do so, the results reported by each individual should be made available for inspection by all employees in the same group.

Ordinarily, measurement appeals to ambitious employees who take pride in their work and the co-operation and support of these employees can be won with little effort. The attitude of the other kind of employees to measurement is immaterial because ordinarily they do not stay around very long anyway.

Application

It is comparatively easy to apply these principles to the measurement of individual office activities such as filing, mailing, typing, etc., so that the relative efficiency of employees *doing the same kind of work* can be determined. Mr. W. H. Leffingwell, one of the great office management pioneers, has gone much further than this and has perfected a method that makes it possible to compare, for example, the work of a stenographer with that of a file clerk or bookkeeping machine operator in the same organization.

Formula for Stating Efficiency Illustrated

The basic elements of the plan are as follows: A standard rate of production is set on all standardized operations. One hour's production at the standard rate equals one work unit. Accordingly, the actual production divided by the standard production per hour equals the number of work units produced. Then the number of work units produced, divided by the number of hours worked (or number of time units—a time unit being one hour), equals the percentage of average efficiency. The following chart illustrates the application of the formula, and the following standards of production, taken from reports to the National Office Ratio Survey, have been used in the illustration:

Filing—100 pieces per hour.
Punching Tabulating Machine Cards—333 cards per hour.
Calculating (extending invoices)—507 invoices per hour.
Billing—17 invoices per hour.
Ledger Posting—225 accounts per hour.

Columns 3 and 4, respectively, show "Actual Production Amount and Time," as follows:

Filing—150 pieces in 1 hour and 15 minutes.
Punching—275 cards in 45 minutes.
Calculating—400 invoices in 54 minutes.
Billing—28 invoices in 1 hour and 15 minutes.
Ledger Posting—225 accounts in 1 hour.

With the proper application of the formula given, the average efficiency of each employee can be determined.

Formula:

ONE HOUR'S PRODUCTION AT STANDARD RATE=ONE WORK UNIT
ACTUAL PRODUCTION÷STANDARD PRODUCTION PER HOUR=NO. OF WORK UNITS PRODUCED
NO. OF WORK UNITS PRODUCED÷NO. OF HOURS WORKED=% OF EFFICIENCY

(1)	(2)	(3)	(4)	(5)	(6)
Operation	*Standard Rate of Production*	*Actual Production Amount*	*Actual Production Time*	*No. of Work Units Produced*	*% of Efficiency*
(A) Filing	100	150	1' 15"	1.5	120.0
(B) Punching Cards...	333	275	45"	.8255	110.2
(C) Calculating	507	400	54"	.7889	87.6
(D) Billing	17	28	1' 15"	1.647	131.7
(E) Ledger Posting ...	225	225	1'	1.	100.0

Mailing Department

And now let us give some thought to measurement methods, the practical side of our subject.

The first form to be considered is captioned "Daily Record—Incoming & Outgoing Mail" and is designated as Figure M-1. Of course, this form and all of the other forms we will consider

should be supplemented with complete instructions covering every factor that enters into its preparation. For example, the term "No. of Pieces" requires some explanation. Obviously a personal letter addressed to a department head would count as a single piece of mail. On the other hand, a single envelope of mail received from a branch office may contain a dozen or more pieces of mail each addressed for the attention of a different general office department.

The "Incoming Mail" section of the report is filled out immediately after each delivery is received and the mail is sorted. Special deliveries may be considered as part of the last previous delivery.

The "Outgoing Mail" section should occasion no difficulty. After each collection, the number of pieces taken from each department are counted and recorded. The columns captioned "Misc." are provided for recording the delivery and collection of personal letters that are known to have no connection with the business.

The daily totals may be transferred from Figure M-1 to a monthly summary form which will reasonably reflect the activity of the mailing department as a group from day to day. The efforts of the group as reported may be compared with standards of possible performance. If the production reported consistently falls much below the standard set, there is reason to believe that the staff is overmanned. It is important that when standards are set, due allowances be made for those additional duties often performed by mailing department employees.

Filing Department

Figure F-1, a proposed "Daily Summary of Filing Department Activities," next claims our attention. This form is largely self-explanatory. The remarks already made concerning the term "No. of Pieces" likewise apply here. "Tickler—CL" refers to so-called tickler copies of letters, a well-known feature of present-day office management.

A specimen requisition for correspondence or other file material is also presented for consideration. These requisitions are sorted by departments and the number thereof entered on the reports at the end of each working day.

FIGURE M-1

DAILY RECORD - INCOMING AND OUTGOING MAIL

DATE...May 17...1939

INCOMING MAIL (NO. OF PIECES)

TIME OF DELIVERY	DEPT A	DEPT B	DEPT C	DEPT D	DEPT E	EXEC. OFFICE		MISC	TOTAL
8.00AM	137	87	163	37	68	54		15	551
8.30AM	176	69	134	49	56	41		7	482
10.30AM	34	17	73	8	11	3		0	146
1.00PM	19	8	30	13	4	1		0	75
3.00PM	40	15	6	37	70	37		4	149
TOTALS	351	196	406	134	159	131		26	1403

OUTGOING MAIL (NO. OF PIECES)

TIME OF COLLECTION	DEPT A	DEPT B	DEPT C	DEPT D	DEPT E	EXEC. OFFICE		MISC	TOTAL
9.00AM	"	"	"	"	"	3		"	3
9.30AM	"	"	"	"	"	17		"	17
10.00AM	4	"	5	3	10	"		"	22
10.30AM	33	77	43	10	6	43		"	142
11.00AM	"	4	"	2	"	"		"	6
11.30AM	14	3	26	5	"	3		3	54
12 00N	57	37	34	62	42	9		"	241
1.30PM	"	"	"	3	"	"		"	3
2.00PM	20	32	21	"	10	"		"	83
2.30PM	4	11	3	"	4	5		"	27
3.00PM	7	8	3	26	"	5		"	49
3 30PM	15	4	"	4	"	3		"	26
4.00PM	17	7	"	"	26	"		"	45
4.30PM	86	66	47	134	93	30		2	458
5.00PM	35	27	15	49	33	"		"	159
5.15PM	4	17	"	4	"	"		"	20
TOTALS	289	238	197	308	224	93		7	1356

Signed - CFC

As in the case of the mailing department measurement report, the daily totals shown on Figure F-1 may be transferred to a monthly summary form with the same desirable results.

FIGURE F-1

DAILY SUMMARY OF FILING DEPARTMENT ACTIVITIES

DATE.....May 17.....193

NO. OF PIECES CODED & FILED

TIME OF COLLECTION	DEPT A	DEPT B	DEPT C	DEPT. D	DEPT E	EXEC. OFFICE		MISC	TOTAL
9.30AM	153	105	67	187	176	17		7	672
10.30AM	9	4	14	8	3	"		"	38
2.30PM	24	32	9	15	7	40		"	171
4.30PM	31	"	4	3	"	4		"	42
TOTALS	187	141	89	213	186	56		7	879

NO. OF PIECES REQUISITIONED FROM FILES

ORIGIN	DEPT A	DEPT B	DEPT C	DEPT D	DEPT E	EXEC. OFFICE		MISC	TOTAL
TICKLER-CL	15	17	9	14	7	38		"	90
REQ.	21	30	7	"	6	17		"	81
TOTALS	36	47	16	14	8	55		"	171

FIGURE F-2

REQUISITION FOR CORRESPONDENCE OR OTHER MATERIAL FILED

DATE May 17 193

PLEASE DELIVER TO A.J. C. Dept

CORRESPONDENCE
~~OTHER FILE MATERIAL~~
RELATING TO: Jx. matter

SIGNED A.J.

Stenographic Department

The next four forms relate to stenographic activity and are predicated on the establishment of a centralized stenographic department. Figure S-1 is a proposed "Daily Record of Work." All productive time should be accounted for accurately. The balance of working time may then be charged as unassigned.

Note that Miss White took dictation from Mr. Thompson from 9:30 to 11:45. The elapsed time in minutes is entered under the general caption "Dictation" in the column provided. The next column is used to record the number of pages of stenographic notes. The number of lines is entered after the notes have been transcribed. This information facilitates the prepara-

FIGURE S-1

Daily Record of Work for Stenographers

NAME Miss White

TIME		DICTATION			EXPLANATION	TRANSCRIPTION		COPY WORK		OTHER WORK	UNASSIGNED
BEGAN	ENDED	NO. OF MINUTES	NO. OF PAGES	NO. OF LINES		NO. OF MINUTES	NO. OF LINES	NO. OF MINUTES	NO. OF LINES	MINUTES	MINUTES
Monday 17th											
9:00	9:30										30
9:30	11:45	135	29	584	Miss Thompson						
11:45	12:00				Do	15					
1:00	4:10				Do	190	584				
4:10	4:25										15
4:25	4:35				Comparing					10	
4:50	5:00				Special Report Run Off			10	36		
		135				205		10		10	60
Tuesday 18th											
8:00	4:30				Do			90	463		
Monday 17th											

tion of the Dictation Summary Report which we will consider a bit later.

The number of minutes spent in transcribing notes, together with the number of lines transcribed, are entered in the columns captioned "Transcription." A simple ruler makes the calculation of the number of lines typed the work of a few seconds only. Copy work is accounted for similarly. Other work is recorded in minutes only because its variety precludes measurement in number of lines. Incidentally, the number of lines in this illustration is meant to refer to standard 6-inch lines of typewritten matter—a good example of an invariable unit of measurement. The only real objection ever raised to the standard line is the fact that in the case of short letters, this means of measurement offends the operator's artistic sense.

At the close of each day the productive time is added up and deducted from the total number of minutes in the normal working day. Any balance represents unassigned time. Overtime is reported separately. Before leaving this form it might be well to state that carbon copies of letters should be used by stenographers when making up their reports so that the originals are not held up in any way. No credit should be given for re-typing incorrect work.

Analysis of Stenographic Record

The basic information for the preparation of Form S-2, "Analysis of Stenographic Record," is provided by a work sheet prepared by the head stenographer from Form S-1. Simple division gives the results entered respectively in the last two columns captioned "Lines per Page" and "Lines per Minute." The department average of lines per minute is computed by dividing the total number of lines by the total number of transcription minutes.

Only perfect work should be given credit for as a means of checking the accuracy of the daily reports. The head stenographer should maintain an adjustment sheet covering all work rewritten because of stenographic errors. The time spent in correcting work should be shown as "Other Work." In this way credit for the transcription is taken only once. If any work is rewritten by another person, a corresponding deduction should

be made in the production report of the person responsible for the incorrect work.

It is important to note that Form S-1 may be made the source of other helpful summary weekly or monthly reports showing, for example, the relative amount of time spent in taking dictation, in transcribing, on copy work, or other work in addition to the amount of unassigned time.

FIGURE S-2

ANALYSIS OF STENOGRAPHIC RECORD

		Minutes		Week of 6/14 to 19, 193			
Stenographer	*Days*	*Dictation*	*Transcription*	*Pages*	*Lines*	*Lines per Page*	*Lines per Minute*
Ainsworth	5½	25	40	10	203	20.30	5.08
Keale	5½	518	487	158	1708	10.81	3.51
Greer	5½	250	470	86	1605	18.78	3.41
Schmitt	5½	475	1405	194	4028	20.76	2.87
Griffin	5½	865	990	136	2267	16.43	2.30
Werner	4½	299	1066	163	2400	25.72	2.25
Knecht	5½	488	1302	191	2533	13.26	1.94
Kearns	5½	250	1061	114	1807	15.85	1.70
Santrock	5½	319	932	190	1543	8.12	1.66
Ritchell	5½	265	1075	142	1377	9.70	1.28
Seufert	5½	234	1306	168	1384	8.12	1.06
Golden	5½	90	120	12	127	10.58	1.06
				Department average of Lines per minute			2.05

(Courtesy of Ronald Press Co.—*Management Handbook.*)

Layout Chart

Figure S-3, a "Layout Chart," is designed to expedite the proper assignment of stenographers. It also assists in the equitable distribution of the work to be done. The figures shown along the top of the form represent half-hour divisions of the working day. The figures entered in the column captioned "Minutes per Page" is an estimate of the amount of time normally taken by each stenographer to transcribe one page of her notes. The Daily Record of Work furnishes a reliable source for the necessary information on which to base an estimate.

After taking dictation, a stenographer reports to the head stenographer the number of pages of notes to be transcribed.

FIGURE S-3

Layout Chart in a Stenographic Department

Wednesday, July 14

Miss	MIN per PAGE	9:30 10 10:30 11 11:30 12 12:30 1 1:30 2 2:30 3 3:30 4 4:30 5
Brown	10	
Black	15	
Gray	12	
Green	15	
White	5	

(Courtesy of Ronald Press Co - "Management Handbook")

This number is multiplied by the estimate indicated in the "Minutes per Page" column by the head stenographer who draws a heavy black line to indicate the length of time the stenographer will be engaged. Accordingly, at any time during the day the head stenographer knows reasonably well the stenographers who are available for dictation.

Dictation Summary

Figure S-4 is an adaptation of a form featured in Galloway's *Office Management.* The function of this form is to measure dictating efficiency. The basic information for the summary is taken from the stenographers' daily reports. Of course, it is necessary that the head stenographer accumulate the daily results on a weekly work sheet to facilitate the preparation of the Dictation Summary. The number of lines dictated per minute is found by dividing the number of lines transcribed (Column 3) by the number of dictation minutes (Column 1).

The number of transcription minutes often furnishes additional evidence of inefficiency. You will note that in one illustration Mr. Black's dictation time exceeds the transcription time. Evidently Mr. Green can give Mr. Black some helpful advice concerning dictation methods.

FIGURE S-4
DICTATION SUMMARY
Week of May 15th to May 20th, 193

	Dictation		*Transcription*		*No. Lines Dictated*
	Minutes	*Pages*	*Lines*	*Minutes*	*Per Min.*
Mr. Green	180	79	1536	785	8.53
Mr. Black	935	122	1995	740	2.13
Mr. White	70	16	301	135	4.30

Adapted from Dictation Record (Fig. 39—*Office Management,* Galloway—Ronald Press, N. Y.)

Posting Operations

Let us next turn our attention to machine bookkeeping, which, because of its repetitive character, readily lends itself to measurement.

Figure O-1 illustrates a "Ledger Posting Control Sheet." As its name implies, this record is kept by the control clerk. Each batch of unit posting media is accompanied by an adding machine list showing a predetermined total of the items to be posted. The use of a ruler similar to the one illustrated in part, makes it an easy matter for the control clerk to determine the number of items to be posted. When the work is given to an operator the type of posting is indicated, together with the starting time. The number of tickets and the predetermined amount thereof are also entered in the columns provided, debits and credits being shown separately.

When the posting run is completed, the control clerk compares the machine total which appears on the operator's proof sheet with the predetermined total entered on the control sheet. If the amounts agree, the finished time is recorded and the number of minutes of productive time extended. In this manner, time spent in correcting errors is charged to productive effort and has the effect of reducing the average number of tickets posted per minute.

The column captioned "No. of Min." and the two columns headed "No. of Tickets" are added daily and the totals carried to a form illustrated by Figure O-2 which we will look at next.

Monthly Summary of Operator Production Results

Figure O-2 is a "Monthly Summary of Operator Production Results," reflected both in minutes and in number of postings. The number of minutes represents the time spent in actual posting plus time spent in correcting errors. In other words, the operator is not penalized because of unassigned time.

The source of the information necessary to prepare this form is the ledger posting control sheet just described. At the end of the month the columns are totaled and the total number of postings divided by the total number of minutes in order to determine the average number of postings per minute for each operator. These averages may be compared with properly set standards of production as a means of judging operator efficiency.

Daily and Weekly Record of Work

A "Daily and Weekly Record of Work" kept by each machine operator is illustrated by Figure O-3. Note that only productive

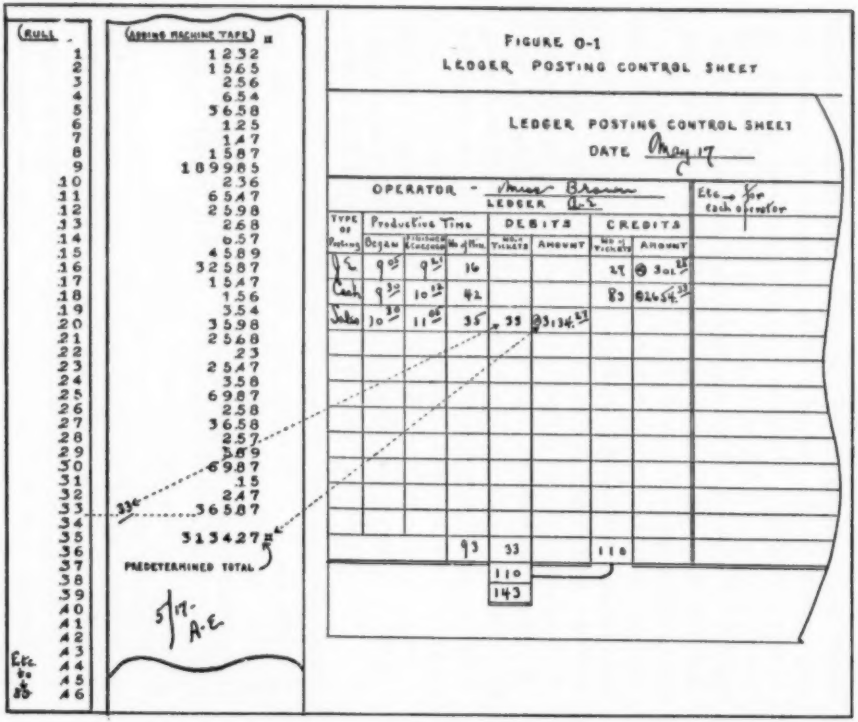


FIGURE 0-1
LEDGER POSTING CONTROL SHEET

LEDGER POSTING CONTROL SHEET

DATE May 17

OPERATOR - Miss Brown
LEDGER A-L

Etc. for each operator

TYPE OF Posting	Productive Time Began	Finished Checking	No. of Items	DEBITS No. of Tickets	DEBITS Amount	CREDITS No. of Tickets	CREDITS Amount
A/c	9 23	9 53	16			27	3 01 53
Cash	9 53	10 23	42			83	616 54 33
Sales	10 30	11 53	35	33	93 134 53		
			93	33		110	
				110			
				143			

FIGURE 0-2

Monthly Summary of Operator Production Results

DATE May	Miss A Ledger A-E		Miss B Ledger F-K		Miss C Relief-Esther		Miss D		Miss E		Miss F Etc	
	Minutes	No. Postings	Minutes	No. Postings	Minutes	No. Postings	Minutes	No. of Postings	Minutes	No. of Postings	Minutes	No. of Postings
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17	170	342										
18	365	840										
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
TOTALS	535	1202										
AVERAGE NO OF POSTINGS PER MINUTE		2.24										

Note:- Minutes represent time spent in actual posting plus time spent in correcting errors.

FIGURE 0-3

Daily and Weekly Record of Work - Machine Operator

Name - Mrs. Jessen (extra)

DATE	TIME BEGAN	TIME FINISHED	TIME WORKED No. of Min.	MACHINE OPERATION No. of Min.	ANALYSIS OF OTHER WORK — EXPLANATION	TRIAL BALANCE No. of Min.	SORTING No. of Min.		MISC No. of Min.
			1475	525	← Totals brought forward →	✓	540	✓	410
5/20	11:25	11:53	45	45					
			1520	570	TOTALS	✓	540	✓	410

Weekly Summary

Total Time to be accounted for	2280	540
Total Time accounted for as above	1520	✓
Balance - Unassigned and Not Working	760	950
		570
		1520

time is recorded. Productive time is analyzed according to machine operation, trial balance work, sorting and miscellaneous. An extra blank column is provided for possible future use. At the end of the week the columns are totaled and a summary is prepared.

At the right edge of the sheet the number of minutes devoted to sorting, trial balance work and miscellaneous work are added together and sub-totaled in order to indicate readily the amount of time devoted to other work. To this sub-total is added the number of minutes spent in machine operation. The resulting grand total should check with the total of the column captioned "Time Worked." This total represents the time spent in productive effort and is entered on the second line of the weekly summary opposite "Total Time Accounted for as Above." The total time to be accounted for is easily computed by multiplying the number of hours in the working week by 60. Our illustration is based on a 38-hour week. Simple subtraction gives the amount of unassigned time. Incidentally, it is recommended that overtime be recorded separately.

Summary of Operator Productive and Non-Productive Time

A "Weekly Summary of Operator Productive and Non-Productive Time" is illustrated by Figure O-4. This weekly summary provides the posting medium for the preparation of this form, the column captions of which are self-explanatory. The convenience of the sub-total showing the number of minutes devoted to other work in Figure O-3 is demonstrated. Note that

FIGURE O-4

WEEKLY SUMMARY OF OPERATOR PRODUCTIVE & NON-PRODUCTIVE TIME

WEEK OF 5/15/3— TO 5/20/3—

Name of Operation	Total Time To be Accounted For	Machine Operation		Other Work		Unassigned and Not Working	
		No. of Min.	% Total Time	No. of Min.	% Total Time	No. of Min.	% Total Time
Miss Brown.	2280	1475	.648	495	.217	310	.135
Miss Green..	2280	570	.250	950	.417	760	.333
Totals	4560	2045	.448	1445	.317	1070	.235

the percentage of total time devoted respectively to machine operation and other work, in addition to the percentage of total time represented by unproductive effort, is given not only for each operator but for the department as a whole as well. Of course, the figures indicated in all of these forms are merely representative.

Accounting Department

As a means of intelligently directing the group effort of an entire accounting department toward a common goal, such as the expedient transmittal of the required branch office reports, correctly prepared, to the general office, a flow chart can be prepared. Written instructions covering in detail the responsibilities of each member of the accounting division should support the flow chart. In every case the instructions should clearly give, define or describe:

1. Each form and record handled.
2. The source of each record handled and the latest moment of time that each should be received by the person responsible for the succeeding operation.
3. Complete operating instructions and maximum time allowances covering the necessary work to be performed.
4. Explicit directions regarding the transmittal of all completed work.

A circle is placed on line with the form affected by each activity. When the necessary work has been finished, the day of completion is indicated within the circle, followed by the time of the day. For example, 2 within a circle, followed by 1 P.M. means that the work was completed at 1 P.M. on the second day. In this way no form can possibly be overlooked. You can appreciate how it must feel, after making heroic efforts to get all of your reports in on time, to receive from headquarters after the zero hour a telegram reading "Not bad but when can we expect Form PDQ23?" The flow chart should eliminate the necessity for such messages.

Performance Schedule for Accounting Department

Figure G-1 illustrates part of a performance schedule which shows the work to be done and the bogie time allowed for the accomplishment thereof by each office group. The solid lines

indicate the bogie time for every operation or report in each group, that is, the checkers should complete their work on Agency 3 Report by 1 P.M. on Tuesday—the second day. The dotted line immediately under each solid line indicates actual performance. Agency 3 Report was completed by the checkers in par. Agency 6 Report took an extra hour to complete. The checkmark appearing at the right edge of the operation and/or report column shows that all necessary work has been done. A similar checkmark preceding the group column shows that the group as a whole has finished its work.

Note the circled figure following Form 99 in the first group. This figure indicates that four hours overtime was required to finish the work on Tuesday. Report RKD—20 in the second group should have been completed by 4 P.M. on Tuesday. For some reason or reasons the work was not finished on Tuesday. Early Wednesday morning every effort was put forth to smooth out the difficulty encountered, with the result that the work was completed on Wednesday even though two hours overtime was necessary. The best thing that can be said about this performance chart is that it has actually withstood the test of practical application.

Conclusion

And now, let us briefly review some of the results obtainable through the medium of sound principles and methods of measuring office activities.

During the past few years in particular, most executives and office managers have been sorely perplexed with questions like these:

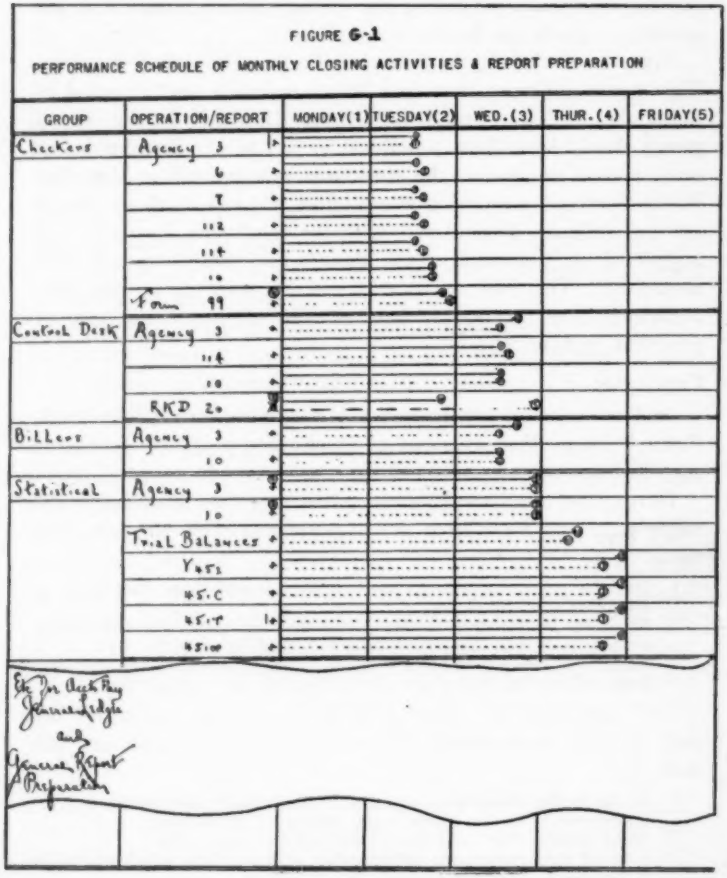
1. Has the volume of clerical work fallen off and if so, how much as compared with, let us say, 1929?
2. Based on performance results rather than on snap judgments, which employees in each department are most proficient?
3. What improvements in routine can be effected to reduce clerical overhead without sacrificing general efficiency to any marked degree?

The application of sound principles of measurement will not only provide automatically the answers to these questions, but will also:

1. Assist in the elimination of superfluous clerical effort with resulting improvements in the quantity and quality of production.
2. Make possible the budgeting of personnel requirements.
3. Give all employees equal opportunities to prove their worth and make it possible to equitably reward efficient service.

4. Make possible the scientific selection and training of employees.
5. Facilitate supervision.
6. Provide reliable information for putting into effect wage incentive and bonus systems.

All of which may be summarized in the simple statement "Measurement of office activities assists in the production of maximum results with minimum effort and at reasonable cost." The truth of this statement has been demonstrated by the actual experiences of many of our larger business organizations.

FIGURE G-1

PERFORMANCE SCHEDULE OF MONTHLY CLOSING ACTIVITIES & REPORT PREPARATION